

FY2006

BLUE GRASS ARMY DEPOT
Richmond, Kentucky
INSTALLATION ACTION PLAN

Statement of Purpose

The purpose of this Installation Action Plan (IAP) is to outline the total multi-year Installation Restoration Program (IRP) for an installation. The plan will define all IRP requirements and propose a comprehensive approach and associated costs to conduct future investigations and remedial actions at each IRP site at the installation.

In an effort to document planning information for the IRP manager, U.S. Army Environmental Center (USAEC), executing agencies, regulatory agencies, and the public, an IAP has been completed for Blue Grass Army Depot (BGAD). The IAP is used to track requirements, schedules, and tentative budgets for all major Army installation restoration programs.

All site specific funding and schedule information has been prepared according to projected overall Army funding levels and is therefore subject to change.

The following agencies contributed to the formulation and completion of this 2006 Installation Action Plan for Blue Grass Army Depot during a planning workshop by conference call held on 21 March 2005:

Blue Grass Army Depot

EEI for USAEC

Kentucky Department of Environmental Protection

US Army Corps of Engineers, Louisville District

US Army Environmental Center (USAEC)

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COST

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Acronyms & Abbreviations

ACSIM	Assistant Chief of Staff for Installation Management
AEDB-R	Army Environmental Database – Restoration
AMC	Army Materiel Command
APC	Air Pollution Control System
AOC	Area of Concern
ARAR	Applicable or Relevant and Appropriate Requirements
AST	Aboveground Storage Tank
ATSDR	Agency for Toxic Substances and Disease Registry
BEHP	bis(2-ethylhexyl)phthalate
BGAD	Blue Grass Army Depot
BLGR	Blue Grass Army Depot (as used in AEDB-R)
bgs	below ground surface
CERCLA	Comprehensive Environmental Response Compensation and Liability Act (1980)
CMI	Corrective Measures Investigation
CMI(O)	Operation of Corrective Measures Implementation
CMS	Corrective Measures Study
COC	Contaminants of Concern
COE	Corps of Engineers
CS	Confirmatory Sampling
CTC	Cost-to-Complete
DA	Department of Army
DEAC	Deactivation
DES	Design
DERA	Defense Environmental Restoration Account (now called ER,A)
DD	Decision Document
DMIL	Demilitarization
DPW	Directorate of Public Works
DRMO	Defense Reutilization and Marketing Office, Branch of Defense Logistics Agency
EP	Environmental Protection
EPA	(United States) Environmental Protection Agency
ER,A	Environmental Restoration, Army (formerly called DERA)
FS	Feasibility Study
ft	foot
FY	Fiscal Year, Federal Government (1 September to 31 October)
g	Gallon
GRI	General Refuse Incinerator
GW	Groundwater
IAP	Installation Action Plan
ICM	Interim Corrective Measure
IOC	Industrial Operations Command
IRA	Interim Remedial Action
IRP	Installation Restoration Program
JMC	Joint Munitions Command
K	\$1,000
KEDP	Kentucky Department of Environmental Protection
LTM	Long-Term Management

Acronyms & Abbreviations

LTO	Long-Term Operation
LUC	Land Use control
MC	Munitions Constituents
MCL	Maximum Contaminant Level
NFA	No Further Action
NPL	National Priorities List
OB/OD	Open Burning / Open Detonation
OE	Ordnance and Explosive
ORD	Ordnance
OSC	Operations Support Command
O&M	Operation & Maintenance
PA	Preliminary Assessment
PAO	Public Affairs Office
PBC	Performance Based Contracting
PCB	Polychlorinated Biphenyl
POM	Program Objective Memorandum (budget)
PRG	Preliminary Remediation Goals
PY	prior year
RA	Remedial Action
RA(C)	Remedial Action (Construction)
RA(O)	Remedial Action (Operation)
RAB	Restoration Advisory Board
RC	Response Complete
RCRA	Resource Conservation and Recovery Act
RD	Remedial Design
REM	Removal
RDX	Cyclonite: Royal Demolition Explosives
RFA	RCRA Facility Assessment
RFI	RCRA Facility Investigation
RI	Remedial Investigation
RIP	Remedy in Place
ROD	Record of Decision
RRSE	Relative Risk Site Evaluation
SI	Site Inspection
SVE	Soil Vapor Extraction
SVOC	Semi-Volatile Organic Compounds
SWMU	Solid Waste Management Unit
TNT	2,3,4 - Trinitrotoluene
USACE	United States Army Corps of Engineers
USAEC	United States Army Environmental Center (formerly called USATHMA)
USAEHA	United States Army Environmental Hygiene Agency (now called CHPPM)
USATHMA	United States Army Toxic and Hazardous Material Agency (now called AEC)
USACHPPM	United States Army Center for Health Promotion and Preventive Medicine
UST	Underground Storage Tank
VOC	Volatile Organic Compounds
yr	year

CERCLA and RCRA Acronym Conversions

CERCLA and RCRA Acronym Conversions

<u>CERCLA</u>		<u>RCRA</u>
Preliminary Assessment (PA)	=	RCRA Facility Assessment (RFA)
Site Inspection (SI)	=	Confirmation Sampling (CS)
Remedial Investigation/ Feasibility Study (RI/FS)	=	RCRA Facility Investigation/Corrective Measures Study (RFI/CMS)
Remedial Design (RD)	=	Corrective Measures Implementation (Work Plan) (CMI(WP))
Interim Remedial Action (IRA)	=	Interim Corrective Measure (ICM)
Remedial Action (Construction) (RA(C))	=	Corrective Measures Implementation (Construction) (CMI(C))
Remedial Action (Operation) (RA(O))	=	Corrective Measures Implementation (Operation) (CMI(O))
Long Term Management (LTM)	=	Long Term Management (LTM)

INSTALLATION LOCALE:

The Blue Grass Army Depot (BGAD) covers approximately 14,600 acres in Madison County, Kentucky. The nearest municipality is Richmond (approximate population of 30,700). Other key municipalities in the region include Berea (with a population 8,200), approximately 8 miles south of BGAD, and Lexington (approximate population of 350,000), located about 35 miles north of BGAD.

LEAD ORGANIZATION:

Joint Munitions Command (JMC)

IRP EXECUTING AGENCIES:

Louisville District Corps of Engineers (COE)

REGULATORY PARTICIPATION:

Common Wealth of Kentucky Environmental and Public Protection Cabinet
Department of Environmental Protection

REGULATORY STATUS:

Non-National Priorities List (Non-NPL)
RCRA Hazardous Waste Storage Part B Permit for Non-Chemical Related Items (September 30, 2004)
Interagency Agreements, None

DESCRIPTION:

BGAD is an active federal government-owned, government-operated facility.

HISTORY:

BGAD was originally established in April of 1942 for the receipt, issuance, storage, maintenance, and disposal of ammunition. Construction of BGAD was a product of the War Department's expansion of ordnance supply depots during World War II. The installation was operated by the Federal Government until October 1943, at which time the operation of the installation was assumed by a corporation under the name of Blue Grass Ordnance Depot, Inc., a subsidiary of the Firestone Tire and Rubber Company. The corporation operated the installation until October, 1945 when again the Federal Government assumed control.

Land use within the facility is comprised of areas dedicated to the demolition of ordnance and munitions, storage of ordnance and munitions, grazing land for cattle and depot facilities. Storage of ordnance and munitions is primarily accomplished through subsurface igloos and in above-ground warehouses. Disposal of ordnance and munitions is accomplished through an incinerator, open burning of propellant, and detonation. Open land not used by depot operations is leased by the government to cattle ranchers for grazing. Approximately 30% of the site is leased for livestock grazing.

MISSION:

To provide munitions, chemical defense equipment and special operations support to the Department of Defense.

Cleanup Program Summary

HISTORIC ACTIVITY:

Blue Grass Army Depot was first commissioned in December 1941 as Blue Grass Ordnance Depot. Construction of BGAD commenced in April 1942 during World War II and BGAD began receipt of ammunition shipments. The depot has also stored chemical agents since 1942.

CURRENT ACTIVITY:

The current mission of BGAD is to provide munitions, chemical defense equipment, and special operations support to DOD. There are several tenant activities on the depot. The largest tenants are L3 Communication that overhauls helicopters and Blue Grass Chemical Activity who manages the storage of chemical agents.

PROGRAM PROGRESS SUMMARIES:

IRP:

BGAD will continue LTM at 6 sites which includes an old and new landfill.

MMRP:

Phase 3 Range inventory was completed and a total of 3 possible MMRP sites identified. A site investigation is scheduled for FY07.

BLUE GRASS
ARMY DEPOT
INSTALLATION RESTORATION
PROGRAM

STATUS: Non-NPL with RCRA Hazardous Waste Storage Part B Permit for Non-Chemical Related Items (September 30, 2004)

TOTAL # OF AEDB-R SITES: 57

RESPONSE COMPLETE (RC) WITH LTM: 7

RESPONSE COMPLETE SITES: 54

DIFFERENT SITE TYPES:

4 Burn Areas	6 Contaminated Buildings	3 Explosive Ordnance Disposal Areas
1 Contaminated Sediments	16 Storage Areas	5 Unexploded Munitions / Ordnance
2 Surface Disposal Areas	3 Disposal Pit / Dry Well	1 Spill Site Area
1 Firing Range	1 AST	2 Surface Impoundments / Lagoons
3 Incinerators	1 UST	4 Landfills
4 Waste Treatment Plants		

CONTAMINANTS OF CONCERN:

Metals, Explosives, Organics (Volatile/Non-Volatile), Mustard Agent/derivatives

MEDIA OF CONCERN: Soils, Groundwater, Surface Water, Sediment

COMPLETED REM/IRA/RA:

BLGR-002 - Mustard Shell DMIL Area (AOC-C)
BLGR-003 - Projectile DMIL Area
BLGR-005 - Project Chase (SWMU 31)
BLGR-010 - Former Shell Washout Facility (SWMU 27)
BLGR-012 - Former TNT Lagoons Area (SWMU 29)
BLGR-016 - Old Transformer Storage Area
BLGR-023 - Battery Burial Area #1 (Demo Grounds)
BLGR-024 - Battery Burial Area #2/Old Landfill (West)
BLGR-041 - Electrolyte Storage Area (SWMU 19)
BLGR-042 - DRMO Storage Area (SWMU 18)
BLGR-043 - General Refuse Incinerator (SWMU 14)

IDENTIFIED POSSIBLE REM/IRA/RA: UST Removals with Non-ER,A Funds

FUNDING:

Prior Year Funding (up to FY04):	\$ 21,804,000
FY05 Funding:	\$ 203,000
Future Requirements (FY06+):	\$ 4,335,000
Total Funding:	\$ 26,342,000

DURATION:

Year of Inception: 1980
Year of Completion Excluding LTM: 2004
Year of Completion Including LTM: 2032

IRP Contamination Assessment

The majority of hazardous waste generated at BGAD, both past and present, results from the demilitarization, renovation, maintenance, storage, and disposal of munitions. Contamination consists mainly of metals, explosives, and organics (volatile/non-volatile). Groundwater contamination has been identified. There is no evidence that any contamination has left the boundary of the installation.

Beginning in 1982, BGAD was proactive with voluntary investigations and cleanup. Surface water and groundwater quality investigations on BGAD began in 1982. Soil investigations on the BGAD also began in 1982. Initial sampling data indicates the presence of metals and explosives.

The RCRA Facility Assessment Report was completed in April 1992. As a result of the RFA and required follow-up investigations a number of monitoring wells were installed, surface water and groundwater samples were collected and analyzed. Quarterly surface water and groundwater data was collected between 1997 and 1999. Since then, monitoring has been conducted annually. A conceptual groundwater model has been developed.

The BGAD obtained its goal of having all remedies in place by 3rd QTR FY04.

PREVIOUS STUDIES:

1980 Installation Assessment of Lexington-Blue Grass Depot Activity, USATHAMA Report No. 151, April 1980.

1982 SATHAMA Rapid Response Environmental Surveys, Blue Grass Army Depot, November 5, 1982, prepared by ESE, Inc.

1983 USAEHA Hazardous Waste Management Survey No. 37-26-049-84 of the Lexington-Blue Grass Depot Activity, May 16-20, 1983.

1986 RCRA Facility Assessment Report, Prepared by A.T. Kearney, August, 1986 for USEPA Region IV.
PA/SI for BLGR-008.

1987 Law Site Investigation Report BLGR-058.

1989 RCRA Facility Investigation of the Dry Acid Pond Area, Fire Training Area, New Landfill Area, Old Landfill Area, Open Detonation Area, Pink Water Pond Area, Propellant Burn Area, and TNT Lagoon Area. Prepared by Law Environmental, Inc., 1989 for U.S. Army Corps of Engineers.
Monitoring wells installation report (Law).
Old TNT Lagoons (RFA), Law Environmental.
New Landfill, Temporary H Storage Site (RFI), Law Environmental.
BLGR-042 RFA, Law Environmental.
New TNT Washout & Lagoons (RFA), Law Environmental.

1990 Corrective Measures Study for the Dry Acid Pond Area, New Landfill Area, Old Landfill Area, Open Detonation Area, Pink Water Pond, and the TNT Lagoon Area. Prepared by Law Environmental, Inc., 1990 for U.S. Army Corps of Engineers.

IRP Contamination Assessment

Corrective Action Report for the Deactivation Furnace area, DRMO Storage Area, Electrolyte Storage Area and the General Refuse Incinerator Area. Prepared by Law Environmental, Inc., 1990 for U.S. Army Corps of Engineers.

BLGR-041 RFA, Law Environmental.

GRI Report (RFI/CMS), Law Environmental.

Pink Water Ponds (RFI/CMS), Law Environmental, (1989/1990).

Open Detonation Area (RFI/CMS), Law Environmental, (1989/1990).

1991 Preliminary site inspection and file review for BLGR-001, 002, 003, 005, 006, 007, 008, 009, 010, 011, 012, 013, 014, 015, 016, 017, 018, 020, 021, 022, 023, 024, 027, 028, 030, 031, 032, 033, 034, 035, 037, 038, 039, 040, 042, 043, 044, 045, 047, 048, 049, 050, 051, 052, 053, 054, 055, 056, 057, 058, 059 by Advanced Sciences, Inc.

1992 Preliminary Site Inspection for Lexington-Blue Grass Army Depot. Prepared by Advanced Sciences, Inc., 1992 for USATHAMA.

1994 Mustard Burn/Mustard Trenches RFI.

BLGR-021, 059 SI sampling by SVE.

Combined Sites BLGR-033, 056 (RFA Phase II sampling, SVE).

DRMO SVE Report.

1996 Site Investigation Reports for the Holding Ponds (New TNT Lagoons), Temporary H Storage Area, Former Waste Ammo Detn Site, Former Shell Washout Facility, Shell Washout Facility (New TNT Washout Facility), Open Detonation Area, Boiler Blowdown Discharge Areas, Electrolyte Storage Area, Defense Reutilization Marketing Office (DRMO), Battery Burial Area (Demo Grounds). Prepared by Sverdrup Environmental, Inc.

RFI Reports for the Old Landfill, New Landfill, Dry Acid Ponds Area. Prepared by Sverdrup Environmental, Inc.

IRA Plan for the Mustard Burn/Mustard Trenches Area. Prepared by Sverdrup Environmental, Inc.

Remedial Design Investigation Report for the New Landfill and the North Battery Burial Area (Old Landfill). Prepared by Sverdrup Environmental, Inc.

Dry Acid Pond RFI Phase II Report, SVE (Chase Environmental Remedial Action work and additional sampling, 1995).

Old TNT Washout Lagoons Report (RFI Phase II), SVE.

New TNT Washout & Lagoons Report (SI), SVE.

New Landfill RFA Phase II, Remedial Design, SVE.

Old Landfill RFA Phase II, Remedial Design, SVE.

RFA Phase II sampling - Combined Sites BLGR-041 Report, SVE.

1997 Relative Risk Site Evaluation (RRSE) prepared by United States Army Center for Health Promotion and Preventative Medicine (USACHPPM) for the Blue Grass Army Depot, Richmond Facility.

RFA Phase II/ Remedial Action BLGR-051 (SVE/CHASE, 1996/1997).

IRP Contamination Assessment

- 1997** LTM groundwater sampling at BLGR-050.
- 1998** Site Characterization Report Demo Grounds Area. Prepared by Radian, Inc.
Groundwater Monitoring Reports. Prepared by International Technology (IT) Inc.
Annual Report - Long Term Sampling and Analysis Progress Reports, IT Corporation.
BLGR-032 Risk Assessment by Radian.
- 2000** (Phase 1) Final Conceptual Sitewide Groundwater Flow Model developed. Prepared by URS, Dames & Moore.
Depot-Wide Background Soil Investigation. Prepared by Jacobs Env'n., Inc.
Annual Report - Long Term Sampling and Analysis Progress Reports, IT Corporation.
- 2001** Submitted the final Depot-wide Background Soil Investigation Report to KDEP.
Submitted the final report for the Phase II site-wide GW Assessment Monitoring System Evaluation to KDEP.
Human Health Evaluation, Risk Characterization and Development of PRGs for Old TNT Lagoon Area (SWMU 29) submitted to KDEP.
Annual Report - Long Term Sampling and Analysis Progress Reports, IT Corporation.
- 2002** Pristine Background Report, Addendum to the Final Depot-wide Background Soil Investigation Report submitted KDEP.
Final Report for the RCRA Facility Investigation/Corrective Measure Study at the Burning Grounds (SWMUs #2, #3, #6A, #6B, & #7) of the Demolition Area submitted to KDEP.
Final Report of the Corrective Measure Study at the Old TNT Lagoon Area (SWMU #29) submitted to KDEP.
Final Report (Addendum to the Draft Report) for the Facility-Wide Screening Level Ecological Risk Assessment submitted to KDEP.
Quarry Pond Backfill Report submitted to KDEP.
Final Investigation Report Sampling and Chemical Analysis Fire Training Area/Electrolyte Area submitted to KDEP.
2000, 2001 and 2002 Annual Report Long-Term Sampling and Analysis Program submitted to KDEP.
Work Plan for Remedial Actions at Project Chase & Building 1178 submitted to KDEP.
Removal action completed at Project Chase & Building 1178 in Nov 2002.
Annual Report - Long Term Sampling and Analysis Progress Reports, IT Corporation.
Report of Closure Activities Old Transformer Storage Area (SWMU 21), 4/2002, USACE-Louisville District.
Completed removal and disposal of small arms ammunition and residue, ordnance and explosive (OE), and OE/ non-OE scrap from the Muddy Creek located in the Former Open Burn/Open Detonation Area.
- 2003** Phase 3 Groundwater Assessments - URS 2003.
2003 Annual LTM event Shaw Environmental.
Corrective Measure Study (SWMU 17) Fire Training Area - URS 2003.
Remedial Investigations at SWMUs 12, 15 and 16 Shaw Environmental 2003.

IRP Contamination Assessment

2004 Sitewide, Long-Term Monitoring, Operations, and Maintenance Plan, URS 2004.
Quality Control Plan, URS Aug 2004.
2004 Annual Report Long Term Sampling and Analysis Program
Response complete/remedy in place obtained in 2004

CLEANUP EXIT STRATEGY:

Final close-out of sites is dependent upon permit conditions. Continue LTM.

Blue Grass Army Depot
RESPONSE COMPLETE WITH LTM
SITE DESCRIPTIONS

MUSTARD BURN SITE / MUSTARD TRENCHES

(PAGE 1 OF 2)

SITE DESCRIPTION

SWMU 2 is located within a fenced area inside the boundaries of the demolition grounds and is approximately four acres in size. From 1949-1955 this site received approximately 900 rounds, reportedly filled with H-mustard. The rounds were broken apart with shaped charge explosives and burned with scrap wood in two unlined trenches. Upon completion of all of the burning, the trenches were backfilled with surrounding soil.

An environmental survey was conducted in 1981 and two soil samples were collected and analyzed for thiodiglycol. Thiodiglycol was not detected. In 1989 during an RFI, three groundwater monitoring wells were installed and sampled. Arsenic, barium, and chromium were detected at concentrations below their respective maximum contaminant levels. An Interim Remedial Action Plan Study, which included a geophysical survey, and groundwater and surface water sampling, was conducted in 1994. Seven geophysical anomalies were identified in the area. Concentrations of explosives and metals were detected in groundwater. Nine rounds of quarterly groundwater samples were collected and analyzed from 1998 through 2000 with concentrations of metals and explosives above MCLs.

In 2001, the surficial soil was characterized. Twelve soil borings were advanced to one ft bgs and samples were collected and analyzed for VOCs, SVOCs, pesticides/PCBs, explosives, dioxins/furans, and metals. PCB 1260 was detected in one sample and low levels of dioxins/furans and metals were also detected. In 2002, another RFI was completed. A CMS was completed in October 2002 recommending groundwater monitoring and Land Use Controls (LUCs) based on infrequent and limited use.

Two monitoring wells were abandoned in 2002. Three groundwater monitoring wells and two springs are currently being sampled as part of the installation-wide groundwater assessment program. Groundwater in this area is not used for human consumption.

In March 2005, Multi-Incremental Soil Sampling was performed at this site. The goal is to determine if the levels are below the recent adopted Region 9 PRG be KDEP and NO LUC will be required.

STATUS**REGULATORY:** RCRA**CONTAMINANTS:**

Explosives, Metals

MEDIA OF CONCERN:

Groundwater, Surface Water

PHASES	Start	End
RFA	198701	199008
CS	198803	199203
RFI/CMS	200010	200209
LTM.....	200210	201504

RC: 200209

MUSTARD BURN SITE / MUSTARD TRENCHES**(PAGE 2 OF 2)****CLEANUP STRATEGY**

Groundwater will continue to be assessed through annual long term monitoring (3 GW wells and 2 springs). Recent adoption of the Region 9 PRGs by KDEP may eliminate the need for LUCs. Multi-Incremental Soil Sampling was completed in 2005 to determine if levels in soil are below the new PRGs. If required, LUCs will consist of master plan restriction of groundwater use and a digging restriction along with engineering controls.

REFERENCES:

Revised RCRA Facility Assessment (RFA), April 1992 by EPA and Kentucky Division of Waste Management and a 1986 visual site inspection (based on a RFA report compiled in 1986 on waste management units and sampling activities at BGAD)

A preliminary site inspection and file review conducted by Advanced Sciences, Inc., 1991

Mustard Burn/Mustard Trenches RFI, 1994.

USACHPPM Relative Risk Site Evaluation (site visit, 1997), report 3/97.

Monitoring wells installed (Law, 1989); Final Report for the Depot-Wide Background Soil Investigation, 6/2001, Jacobs/Stratum Engineering

Pristine Background Report-Addendum to the Final Depot-Wide Background Soil Investigation, 1/2002, Jacobs/Stratum Engineering

RCRA Facility Investigation at the Burning Grounds (SWMUs #2, #6A, #6B, and #7) of the Demolition Area, Report 7/2002, Jacobs/Stratum Engineering

Corrective Measure Study (CMS) for the Burning Grounds (SWMUs #2, #3, #6A, #6B, and #7) of the Demolition Area, Report 4/2002, Jacobs Engineering, Inc

Final Work Plan for Soil Investigation at SWMU 2 & 7 (March 2005) USACE Louisville District

FORMER TNT LAGOONS/HOLDING PONDS (4)

(PAGE 1 OF 2)

SITE DESCRIPTION

The Former TNT Lagoons are located northeast of Lake Vega. The lagoons were in operation from the early 1940s to 1975 and received wastewater discharged from the Former Shell Washout Facility. When the Shell Washout facility was demolished in 1975, the holding ponds were backfilled with berm material (20 inches of soil on 10 inches of clay) and revegetated. In 1980-1981, a wastewater treatment plant was constructed on a portion of the Former TNT Lagoon site.

Investigations conducted at the site include an Environmental Study in 1982, a Phase I RFI and CMS in 1989-1990, a Phase II RFI from 1994-1999, Long-Term Sampling and Analysis 1998-2000, and supplemental sampling events from 1999-2001. Several groundwater wells were installed as part of these analyses. Human health and ecological risk evaluations were performed and identified constituents of potential concern in soil, groundwater, sediment, and surface water at levels above KDEP acceptable risk. A second CMS was completed in 2002.

Constituents detected in soil samples include 2 VOCs, 9 explosives, 3 pesticides, 1 dioxin, and 16 metals. Of the nine explosives only two, RDX and 2,4,6-TNT, were above one-tenth of the USEPA Region 9 PRGs and the most elevated concentrations were detected in the 1981 and 1989 investigations. With the exception of 1 pesticide, heptachlor, no other organic was detected above the screening criteria of one-tenth of the USEPA Region 9 PRG. Detected metals were within the range of depot-wide pristine background levels. Lead was detected in many soil samples above the KDEP past screening value, but the concentrations were within the range of ambient background levels for the area. There was no documented release of lead that can be attributed to any specific waste management activities within the Old TNT Lagoons.

Explosives and metals were detected in groundwater. 2,4,6-TNT was the only explosive detected above the screening level. Concentrations of detected explosives have decreased over time. Metals detected in sediment and surface water were those that are naturally prevalent in the environment and are the same order of magnitude as detected in background locations at BGAD. The 2002 CMS recommended hot spot excavation, off-site disposal, and Land Use Controls (LUCs). Soil removal occurred in FY03 as a final Remedial Action. BGAD received NFA from KDEP dated 1/17/04.

STATUS**REGULATORY:** RCRA**CONTAMINANTS:**

Explosives, Metals

MEDIA OF CONCERN:

Groundwater, Surface Water

PHASES	Start	End
RFA	198712	198803
CS	198804	199001
RFI/CMS	200109	200203
DES	200204	200205
CMI/(C)	200210	200401
LTM.....	200401	203204

RC: 200401

FORMER TNT LAGOONS/HOLDING PONDS (4)**CLEANUP STRATEGY**

Annual groundwater monitoring of ten site wells and two springs will continue as part of the BGAD Long-Term Sampling and Analysis Program.

REFERENCES:

Old TNT Lagoons (RFA), Law Environmental, 1989 Revised RCRA Facility Assessment (RFA), April 1992 by EPA and Kentucky Division of Waste Management and a

1986 visual site inspection (based on a RFA report compiled in 1986 on waste management units and sampling activities at BGAD);

A preliminary site inspection and file review conducted by Advanced Sciences, Inc., 1991;

Old TNT Washout Lagoons Report (RFI Phase II), SVE 1996;

Old TNT Lagoons Risk Assessment, SVE 1996;

USACHPPM Relative Risk Site Evaluation (site visit, 1997), report 3/1998; Final Report for the Depot-Wide Background Soil Investigation

6/2001, Jacobs/Stratum Engineering; Pristine Background Report-Addendum to the Final Depot-Wide Background Soil Investigation, 1/2002

Jacobs/Stratum Engineering; 1998/99/00/01/02 Annual Report

Long Term Sampling and Analysis Progress Reports, IT Corporation 3/2001, 9/2001, 3/2002 and 4/2002 and 8/2002 respectfully;

Human Health Risk Evaluation Report Risk Characterization and Development of Risk-Based PRGs for the Phase II Corrective Measures Study, 6/2001, Jacobs/Stratum Engineering;

Corrective Measures Study-Old TNT Lagoon Area, 4/2002, Jacobs/Stratum Engineering.

Removal Action Closure Report (Old TNT Lagoons Area) 11/2003, Environmental Chemical Corporation. Blue Grass Army Depot RCRA Hazardous Waste Storage Permit was received effective on 9/30/04.

BLGR-020

NEW LANDFILL

(PAGE 1 OF 2)

SITE DESCRIPTION

The New Landfill was in operation from the 1960s until its closure in 1979. The New Landfill is located in an old limestone quarry north of the Above Ground Magazines on Route 81 and is approximately 1.25 acres. Wastes handled at the landfill included paper products, shipping crates, office waste construction debris and general household refuse. Infectious wastes were reportedly buried in a “Special section” of the landfill.

In 1982 an investigation was conducted and elevated concentrations of lead and chromium were detected in leachate. In 1983 a 30-inch earthen cap was placed on the landfill but the cap wasn’t maintained. In 1989 a RFI was conducted, surface water, sediment and soil samples were collected and several monitoring wells were installed and sampled. Following the RFI, a CMS was conducted. In 1997 a RCRA approved cap was designed and placed on the landfill and the site was fenced. LTM commenced at this site in 1998.

VOCs have been detected infrequently (e.g. 2 or fewer samples) and at low concentrations. Prior to 1999, bis(2-ethylhexyl)phthalate was detected above Applicable or Relevant and Appropriate Requirements (ARARs) in at least one sample from 9 wells, and mercury and lead were detected above ARARs in some samples. Periodic exceedences since 1999 require monitoring.

CLEANUP STRATEGY

Land use controls (master plan restriction of groundwater use and a digging restriction along with engineering controls). Long term management and surface maintenance (cap and fence maintenance, mowing and groundwater sampling) will continue.

REFERENCES:

New Landfill (RFI), Law Environmental, 1989

Revised RCRA Facility Assessment (RFA), April 1992 by EPA and Kentucky Division of Waste Management and a 1986 visual site inspection (based on a RFA report compiled in 1986 on waste management units and sampling activities at BGAD)

A preliminary site inspection and file review conducted by Advanced Sciences, Inc., 1991

New Landfill RFA Phase II, Remedial Design, SVE 1996; USACHPPM Relative Risk Site Evaluation (site visit, 1997), report 3/1998

STATUS

REGULATORY: RCRA

CONTAMINANTS:

Explosives, Metals

MEDIA OF CONCERN:

Groundwater, Surface Water

PHASES	Start	End
RFA	199003	199008
CS	199105	199201
RFI/CMS	199401	199501
LTM.....	199909.....	203204

RC: 199909

BLGR-020
NEW LANDFILL
(PAGE 2 OF 2)

Final Report for the Depot-Wide Background Soil Investigation, 6/2001, Jacobs/Stratum Engineering

Pristine Background Report-Addendum to the Final Depot-Wide Background Soil Investigation, 1/2002, Jacobs/Stratum Engineering

1998/99/00/01/02 Annual Report - Long Term Sampling and Analysis Progress Reports, IT Corporation 3/2001, 9/2001, 3/2002 and 4/2002 and 8/2002 and 4/2003 and 10/2004, respectfully.

BATTERY BURIAL AREA #2 / OLD LANDFILL (WEST) (SWMU 35/36)

(PAGE 1 OF 2)

SITE DESCRIPTION

The Old Landfill (SWMU 35) was in operation from 1942 until its closure in 1971. Wastes handled at the facility included paper products, shipping crates, office waste construction debris and dunnage, domestic and industrial waste sludge, contaminated plating shop solutions and transformer fluids. In 1983, the landfill was capped with a 30-inch earthen cap. Prior to capping, approximately 200,000 dry-cell batteries of unknown type were placed in the Old Landfill. The battery burial area was designated as SWMU 36. The Old Landfill is approximately 3.9 acres in size and is located on the northwest boundary of the facility in an abandoned limestone quarry.

The landfill cap was not maintained. Refuse was exposed at the toe of the landfill and seepage was occurring from the toe and rock sidewalls of the landfill. A RFI was conducted in 1989. Low concentrations of methylene chloride and bis(2-ethylhexyl)phthalate (BEHP) were detected in groundwater. Concentrations of chromium, lead, mercury and silver in surface water were detected at levels potentially unacceptable for the support of aquatic life. A CMS was completed in 1990. In 1994 sediment samples were collected from a creek and pond area; acetone, BEHP, chloride, sulfate, aluminum, arsenic, barium, beryllium, cadmium, chromium, lead, manganese, mercury, and zinc were detected in sediment samples. An Interim Remedial Action Plan Study and Remedial Design Investigation Report were completed in 1996. In 1997, a RCRA approved cap was designed and placed on the site and the site was fenced.

Monitoring began in 1998. Wells are sampled for VOCs, SVOCs, Pesticides/PCBs, and metals. VOCs have been detected infrequently and at levels below applicable or relevant and appropriate requirements (ARARs). BEHP has been detected above ARARs in some samples. Other SVOCs and pesticides have been detected infrequently and at levels below ARARs. Lead is the only metal that was been detected above ARARs and it has not been detected in any sample above the ARAR since 1999. Currently six wells and two springs are being sampled.

CLEANUP STRATEGY

Land use controls (master plan restriction of groundwater use and a digging restriction along with engineering controls). Long term maintenance (cap and fence maintenance, mowing and groundwater sampling) will continue.

STATUS

REGULATORY: RCRA

CONTAMINANTS:

Explosives, Metals

MEDIA OF CONCERN:

Groundwater, Surface Water

PHASES	Start	End
RFA	199003	199008
CS	199105	199201
RFI/CMS	199401	199601
DES	199602	199612
CMI/(C)	200009	200203
LTM.....	200203	201509

RC: 200203

BLGR-024

**BATTERY BURIAL AREA #2 / OLD LANDFILL
(WEST) (SWMU 35/36)**
(PAGE 2 OF 2)

REFERENCES:

Old Landfill (RFI), Law Environmental, 1989

Revised RCRA Facility Assessment (RFA), April 1992 by EPA and Kentucky Division of Waste Management and a 1986 visual site inspection (based on a RFA report compiled in 1986 on waste management units and sampling activities at BGAD);

A preliminary site inspection and file review conducted by Advanced Sciences, Inc., 1991

Old Landfill RFA Phase II, Remedial Design, SVE 1996

USACHPPM Relative Risk Site Evaluation (site visit, 1997), report 3/1998; Final Report for the Depot-Wide Background Soil Investigation, 6/2001, Jacobs/Stratum Engineering

Pristine Background Report-Addendum to the Final Depot-Wide Background Soil Investigation, 1/2002, Jacobs/Stratum Engineering; Quarry Pond Backfill Report, 7/2002, IT Corporation

1998/99/00/01/02 Annual Report - Long Term Sampling and Analysis Progress Reports, IT Corporation 3/2001, 9/2001, 3/2002 and 4/2002 and 8/2002, 4/2003 and 10/2004, respectfully.

FORMER WASTE AMMO DETONATION AREA

(PAGE 1 OF 2)

SITE DESCRIPTION

The Former Waste Ammunition Detonation Area, SWMU 7 (BLGR-059), is located in the demolition grounds area across the road from the Old Projectile Burn Area (BLGR-031) near the intersection of Route 117 and 110. The Former Waste Ammunition Detonation Area was operated from 1949 to 1973; approximately 600 tons of explosive-loaded ammunition containing TNT, composition B, and tetryl were detonated annually. In order to detonate the ammunition, a pit was excavated to a depth of approximately six feet. The waste ammunition and charge were placed in the pit and covered with soil to grade. Once a mound of soil measuring six feet was placed on top, the waste ammunition was detonated. In 1973 the Former Waste Ammunition Detonation Area was replaced by the Open Detonation site.

STATUS

REGULATORY: RCRA

CONTAMINANTS:

Explosives, Metals

MEDIA OF CONCERN:

Groundwater, Surface Water

PHASES	Start	End
RFA	199003	199008
CS	199201	199203
RFI/CMS	199501	200205
LTM.....	200206	201410

RC: 200205

SITE DESCRIPTION

The Pinkwater Pond Area (SWMU 3, BLGR-029) is located just north of Route 110 and adjacent to the Propellant Burn Area. The site is a relatively flat grassy area near the top of a small ridge and covers approximately three acres. Surface water runoff from the site drains into a low-lying area with excess runoff to the Southern Tributary. The Pinkwater Pond Area was a very temporary structure constructed from on-site soils to accommodate startup operations of the new shell washout facility. The site was reportedly used in 1976 to hold TNT wastewater discharged during a shakedown run of the washout facility. The dimensions of the pond were approximately 25 feet by 50 feet; the depth of the pond was unknown. After 1980, the pond was backfilled with soil and the site was regraded. The site is no longer being used.

STATUS

REGULATORY: RCRA

CONTAMINANTS:

Explosives, Metals

MEDIA OF CONCERN:

Groundwater, Surface Water

PHASES	Start	End
RFA	198908	199003
CS	199008	199102
RFI/CMS	199002	199108

RC: 199708

A RFI was conducted in 1989; soil and groundwater samples were collected and analyzed for explosives.

BLGR-059 & 029

FORMER WASTE AMMO DETONATION AREA

(PAGE 2 OF 2)

No explosives were detected in soil samples. In 1997-2000 quarterly groundwater samples were collected. Six explosives and one SVOC were detected at least once. All detections were below screening criteria. Aluminum and manganese were detected above the MCL but below background values. Iron was detected above the MCL in 2 out of 100 samples.

CLEANUP STRATEGY

Groundwater will continue to be assessed through annual long term management. Land use controls (master plan restriction of groundwater use and a digging restriction along with engineering controls) will be implemented. LTM for BLGR-031 is also funded under this site.

REFERENCES:

Former Waste Ammunition Detonation (RFI), Law Environmental, 1989

Pink Water Ponds (RFI/CMS), Law Environmental, 1989/1990;

Revised RCRA Facility Assessment (RFA), April 1992 by EPA and Kentucky Division of Waste Management and a 1986 visual site inspection (based on a RFA report compiled in 1986 on waste management units and sampling activities at BGAD)

SI sampling by SVE, 1994; A preliminary site inspection and file review conducted by Advanced Sciences, Inc., 1991

USACHPPM Relative Risk Site Evaluation (site visit, 1997), report 3/1998

Final Report for the Depot-Wide Background Soil Investigation, 6/2001, Jacobs/Stratum Engineering

Pristine Background Report-Addendum to the Final Depot-Wide Background Soil Investigation, 1/2002, Jacobs/Stratum Engineering

RCRA Facility Investigation at the Burning Grounds (SWMUs #2, #6A, #6B, and #7) of the Demolition Area, Report 7/2002, Jacobs/Stratum Engineering

Corrective Measure Study (CMS) for the Burning Grounds (SWMUs #2, #3, #6A, #6B, and #7) of the Demolition Area, Report 4/2002, Jacobs Engineering, Inc.

Annual Report - Long Term Sampling and Analysis Progress Reports, IT Corporation 3/2001, 9/2001, 3/2002 and 4/2002 and 8/2002, 4/2003 and 10/2004, respectfully.

Blue Grass Army Depot
RESPONSE COMPLETE WITHOUT
LTM
SITE DESCRIPTIONS

RESPONSE COMPLETED WITHOUT LTM AEDB-R SITES

AEDBR #	TITLE	RC DATE
BLGR-001	BUILDING 902, BURSTER REM AREA-BLGR 001	199201
BLGR-002	BLDG #1161, MUSTARD SHELL DMIL AREA	200401
BLGR-003	PROJECTILE DEMIL AREA	199201
BLGR-005	PROJECT CHASE AREA	200309
BLGR-007	BLDG #1170 - PROJ ASSEMBLY AREA	199201
BLGR-008	BLDG #550 - BURSTER & FUZE REMOVAL AREA	200109
BLGR-009	BLDG #1180 - PROJ RENOVATION AREA	199203
BLGR-010	FORMER SHELL WASHOUT FAC, BLDG 1155	200309
BLGR-011	BLDG #570 - NEW TNT/SHELL WASHOUT FAC	199203
BLGR-013	NEW TNT LAGOONS/HOLDING PONDS (2)	200109
BLGR-014	SURVEILLANCE (TEST) RANGE	199201
BLGR-015	TRACER TEST RANGE	199201
BLGR-016	OLD TRANSFORMER STORAGE AREA	200105
BLGR-017	TRAINING AREA/GUN RANGE	199201
BLGR-018	SEWAGE TREATMENT PLANT	199201
BLGR-021	DEACTIVATION FURNACE BUILDING	200304
BLGR-022	WATER TREATMENT PLANT,BLDG 228	199201
BLGR-023	BATTERY BURIAL #1 (DEMO GROUNDS)	200109
BLGR-027	CONVENTIONAL AMMO STOR AREAS(8),848IGLOO	199201
BLGR-028	RCRA, Subtitle C: Hazardous Wastes	199201
BLGR-029	PINKWATER POND	199708
BLGR-030	OPEN DETONATION AREA	199002
BLGR-031	FORMER PROJECTILE PROPELLANT BURN AREA	200209
BLGR-032	NEW PROPELLANT BURN AREA	199909
BLGR-033	BOILER BLOW DOWN DISCHARGE AREAS	200304
BLGR-034	RCRA, Subtitle C: Hazardous Wastes	199909
BLGR-035	ABOVE GROUND STOR TANKS (46)	199008
BLGR-037	LAB AREAS- BLDGS # -1660 & 1661	199201
BLGR-038	NERVE AGENT STOR IGLOOS (F-BLOCK)	199201
BLGR-039	PESTICIDE STORAGE AREA (S-13)	199205
BLGR-040	SEPTIC TANKS/LEACHFIELDS (6)	199201
BLGR-041	ELECTROLYTE STORAGE AREA(NEAR BLDG S-17)	200312
BLGR-042	DRMO STORAGE AREA	200312
BLGR-043	BLDG #T-252, GENERAL REFUSE INC/STO AREA	200307
BLGR-044	BLDG #1178-TRANSFORMER STORAGE	200307
BLGR-045	BLDG #275,CONTAMINATED WASTE PROCESSOR	199201
BLGR-048	IGLOOS B-402,B-404,B-608,B-612	199203
BLGR-049	MAINTENANCE SHOP (S-9,S-11)	199201
BLGR-050	WOOD DUMP/KINDLING YARD (FIRE TRNG AREA)	200312
BLGR-051	DERUST/REPAINT AREAS (BLDGS 550,555,562)	199203
BLGR-052	RUBBLE PILE	199201
BLGR-053	WASTE WATER TREATMENT FACIL. (BLDG 1173)	199201
BLGR-054	BUILDING #218 - RECEIVING AREA	199201
BLGR-055	BLDG #B-51, PAINT STORAGE AREA	199201
BLGR-056	TEMPORARY H STORAGE SITE	200312
BLGR-057	DRUM STORAGE TRENCH (NEAR RT 110)	199203
BLGR-058	WATER TREATMENT PLANT DITCH	199203
BLGR-060	PAINT FILTER DISPOSAL SITE	200312

PAST MILESTONES

1993 Scoping was been completed for 14 sites (Temporary H Storage, Paint Filter Disposal, Electrolyte Storage, DRMO Storage Facility, Former Shell Washout Facility, Dry Acid Ponds, Old TNT Lagoon Area, New TNT Washout Facility, New TNT Lagoons, Boiler Blowdown Areas, Old Battery Burial Area (demo grounds), Former Waste Ammunition Detonation, and Mustard Burn Area). Six site investigations commenced (Old and New Landfills, DRMO site, Electrolyte Storage Area, Boiler Blowdown Area, Mustard Burn Area) and two sites RCRA Facility Investigations Phase II's (Dry Acid Ponds and Old TNT Lagoons) have been awarded.

1994\1995 The Final Draft of the Site Investigation report on the Combined Sites (Temporary H Storage, Paint Filter Disposal, Electrolyte Storage, DRMO Storage Facility and Former Shell Washout Facility) was completed. A Decision Document was prepared for the Combined Sites FY96. A Risk Assessment on the Dry Acid Pond and Old TNT Lagoon Areas was prepared by during FY96. The Old and New Landfills reports will proceed to Remedial Design and Interim Remedial Actions FY95. Removal at the Battery Burial Site (Demo Grds) is completed. A decision document will be prepared FY96.

1996 Final Draft of Risk Assessment for the Old TNT Lagoons area subcontracted out by SVE to Echinfelder Inc., Nashville, Tennessee. Contracts awarded to put RCRA approved caps on the Old and New Landfills, and contract awarded for removal and capping of Dry Acid Ponds.

1997 Conducted Partnering meetings for Old TNT Lagoons area Final Risk Assessment between Installation, COE, SVE, Echinfelder Inc. and the State regulators.

Field work completed on capping for the Old and New Landfills.

Field work completed on removal and backfilling of Dry Acid Ponds.

Commenced with the Long Term Monitoring for SWMUs. Contracted thru COE's ORD Lab, Cinn. Lab closed FY97, new contract to be awarded FY98.

Solicitation in local newspaper for interest in RAB. Received three calls from community expressing interest and reporters from the Richmond Register and Lexington Herald Leader interviewing the PAO and environmental office representative for articles in their respective papers.

Completed all Relative Risk Site Evaluations on non evaluated sites by USACHPPM. Final report by USACHPPM available FY98

1998 BGAD and Regulators continue to work on Risk Assessment on the Old TNT Lagoons. Facility working with Regulators to obtain a Part B Storage Permit. The permit will include the SWMUs under corrective action section.

BGAD, regulators and COE working on Comprehensive Groundwater Management Plan and Conceptual Model for SWMU sites.

BGAD, Regulators, COE, Headquarters personnel participated in two day Regional Partnering Meeting in Frankfort, KY.

Conducted site visits with COE and Federal Facilities Oversight personnel on SWMUs assessment.

Conducted site visits with COE and Federal Facilities Oversight personnel on spring survey.

BGAD awarded new contract for LTM groundwater wells to International Technology, Inc.

BGAD Commander and Acting RAB Coordinator completed inquiries / interest and selected persons to serve on it's RAB. Written confirmation mailed to local RAB members. A RAB orientation was held 12/98.

RAB Coordinator appointed by Commander October 1998.

A Risk Assessment for the OB/OD area was completed 10/98.

1999 Funding obligated to COE to award contract on RI/FS for the Former Projectile Burning Area. Funding obligated to COE to award contract on RI/FS for the Former Waste Ammo Detonation Area.

Monthly meetings continued with KDEP to develop NFA reports.

Contract awarded to International Technology, Inc. to continue with LTM and well maintenance work at SWMUs.

BGAD, KDEP, COE, IOC and USAEC personnel participated in IAP development workshop.

BGAD and Regulators continue to work on Risk Assessment on the Old TNT Lagoons.

2000 Facility continuing work with Regulators to obtain a Part B Storage Permit. The permit will include the SWMUs under corrective action section.

BGAD, regulators and COE working on Comprehensive Groundwater Management Plan and Conceptual Model for SWMU sites.

BGAD, Regulators, COE, Headquarters personnel participated in two day Regional Partnering Meeting in Frankfort, KY.

BGAD, Regulators, COE, Headquarters and Contract Personnel developing/revising SWMU Closeout Schedule.

BGAD, Regulators, COE, Headquarters and Contract Personnel developing/revising Ecological Assessment for sites.

2001 Submitted the final Depot-wide Background Soil Investigation Report to KDEP.

Submitted the final report for the Phase II site-wide GW Assessment Monitoring System Evaluation to KDEP.

Human Health Evaluation, Risk Characterization and Development of PRGs for Old TNT Lagoon Area (SWMU 29) submitted to KDEP.

New Remedial Project Manager in May, 2001.

NFA approval on 33 sites from KDEP.

2002 Submitted the Final 2000 Annual Report, Long-Term Sampling and Analysis Program Report to KDEP.

Submitted the Final 2001 Annual Report, Long-Term Sampling and Analysis Program Report to KDEP.

Submitted the Final 2002 Annual Report, Long-Term Sampling and Analysis Program Report to KDEP.

Pristine Background Soil Report (Addendum to the Final Report-Wide Background Soil Investigation Report. Report was submitted to KDEP.

Quarry Pond Backfill report, July 2002, IT Corporation.

Final Report RCRA Facility Investigation Burning Grounds (SWMUs 2, 3, 6A, 6B & 7), September 2002.

Final Combined Report Phase II RCRA Facility Investigation and Corrective Measures Study Old TNT

Lagoons Area (SWMU 29), October 2002.

Long Term Monitoring Report, Shaw Environmental, October 2002.

2003 Annual Long Term Monitoring Report.
Corrective Measures Study (SWMU 17) Fire Training Area.
Multiple Removal actions closure reports.
Final Report for Remedial Action at SWMU #26 and SWMU #31.

2004 Blue Grass received the Hazardous Wasted Storage Permit in FY04. As a result, NFA status achieved at Sites BLGR-002, 010, 041, 042, 043, 047, 050, 056, and 060. All sites at BGAD are RIP/RC

2005 Multi-Incremental Sampling was done at SWMU 2 (Mustard Trenches) and SWMU 7 (Former Waste Ammo Area)

PROJECTED MILESTONES

Completion and regulatory approval Decision Document for Land Use Controls.

***Note all sites were RIP/RC in 2004**

Phase Completion Milestones:

ROD/DD Approval Dates: None

Construction Completion: FY2002

Completion Date of all RA(C) Activities: FY2004

Completion Date of IRP (including LTM phase): FY2032

BLUEGRASS IRP SCHEDULE

(Based on current funding)

CURRENT PHASE

FUTURE PHASE

AEDB-R	PHASE	FY06	FY07	FY08	FY09	FY10	FY11	FY12	FY13	FY14	FY15+
BLGR-006	LTM										
BLGR-012	LTM										2032
BLGR-020	LTM										2032
BLGR-024	LTM										
BLGR-059/029	LTM										

PRIOR YEAR FUNDING

Past and present funding for Installation Restoration Program activities has been broken down by fiscal year.

Year	Site Information	Expenditures	FY Total
FY81	Preliminary Assessment	\$485.8 K	\$485.8 K
FY87	RCRA Facility Investigation/ Corrective Measures Study (8 sites)	\$816.2 K	\$816.2 K
FY88	RCRA FI/CMS	\$796.3 K	\$796.3 K
FY89	3 Sites	\$29.4 K	\$29.4 K
FY90	RCRA FI/CMS	\$20.0 K	\$20.0 K
FY93	RFI (9 Sites)	\$1,090.0 K	
	Expanded Feasibility Studies and Remedial Design (5 sites)	\$1,105.0 K	
	Long Term Monitoring (2 sites)	\$285.0 K	\$2480.0 K
FY94	Remedial Action (1 Site)	\$500.0 K	
	Site Investigation (10 Sites)	\$785.0 K	
	RFI (4 Sites)	\$500.0 K	
	Remedial Design 4 Sites)	\$500.0 K	
	RFI (6 Sites)	\$1,550.0 K	
	CS/RFI (UST & AST)	\$550.0 K	\$4385.0 K
FY95	CS	\$69.0 K	
	ICM	\$30.0 K	
	REM	\$100.0 K	
	CS Phase II	\$237.0 K	
	CMI(WP)	\$594.4 K	\$1030.4 K
FY96	RFI	\$30.0 K	
	CS	\$30.0 K	
	ICM/SA	\$5.0 K	
	Remedial Design	\$243.0 K	
	Remedial Action	\$ 2,884.0 K	\$3192.0 K
FY97	PY work /Long Term Monitoring	\$456.0 K	\$456.0 K
FY98	Long Term Monitoring /CMS	\$408.5 K	\$408.5 K

FY99	BLGR-005 Project Chase Area (LTM)	\$26.0 K	
	BLGR-006 Mustard Burn Site/(LTM)	\$50.0 K	
	BLGR-012 Former TNT Lagoons/(CMI)	\$40.0 K	
	Holding Ponds (4) (LTM)	\$95.4 K	
	BLGR-020 New Landfill (LTM)	\$94.7 K	
	BLGR-021 Deactivation Furnace Bldg T-273 (LTM)	\$40.0 K	
	BLGR-024 Battery Burial #2/(LTM)	\$115.4 K	
	BLGR-029 Pinkwater Pond (LTM)	\$33.0 K	
	BLGR-030 Open Detonation Area (LTM)	\$30.8 K	
	BLGR-031 Former Projectile (RFI)	\$350.0 K	
	Propellant Burn Area (LTM)	\$50.0 K	
	BLGR-032 New Propellant (RFI)	\$258.9 K	
	Burn Area (LTM)	\$58.8 K	
	BLGR-044 BLDG #1178 Transformer Storage (LTM)	\$15.0 K	
	BLGR-047 Dry Acid Pond Area (2) (LTM)	\$32.0 K	
	BLGR-050 Wood Dump/Kindling Yard (Fire Trng Area) (LTM)	\$30.0 K	
	BLGR-059 Former Waste Ammo Detonation Area (LTM)	\$30.0 K	
	RAB Support	\$5.0 K	\$1,355.0 K
FY00		\$1,364.7 K	\$1,364.7 K
FY01		\$2,347.0 K	\$2,347.0 K
FY02	BLGR-002 (CMI(C))	\$9.5 K	
	BLGR-005 (CMI(C))	\$48.2 K	
	BLGR-006 (RFI)	\$47.5 K	
	BLGR-010 (CMI)	\$64.4 K	
	BLGR-012 (CMI(C))	\$148.3 K	
	BLGR-012 (RFI)	\$30.0 K	
	BLGR-020 (LTM)	\$91.5 K	
	BLGR-021 (RFI)	\$103.7 K	
	BLGR-024 (LTM)	\$80.9 K	
	(CMI(C))	\$20.0 K	
	BLGR-031 (RFI)	\$79.6 K	
	BLGR-033 (CMI(C))	\$124.7 K	
	BLGR-041 (CMI(C))	\$52.5 K	
	BLGR-041 (RFI)	\$3.7 K	
	BLGR-042 (CMI(C))	\$9.2 K	
	BLGR-042 (RFI)	\$50.3 K	
	BLGR-043 (RFI)	\$108.1 K	
	BLGR-044 (CMI(C))	\$26.5 K	
	BLGR-050 (RFI)	\$184.6 K	
	BLGR-056 (RFI)	\$72.3 K	
	BLGR-059 (CMI(C))	\$279.2 K	
	BLGR-059 (CMI(C))	\$50.0 K	\$1684.7 K

FY03	\$582 K	\$582.0 K
FY04	\$371.0K	\$371.0K
Total		\$21,804,000

CURRENT YEAR FUNDING

FY 05 BLGR-006 (LTM)	\$17.0 K	
BLGR-012 (LTM)	\$42.0 K	
BLGR-020 (LTM)	\$36.0 K	
BLGR-021 (LTM)	\$ 3.0 K	
BLGR-024 (LTM)	\$ 31.0 K	
BLGR-031 (LTM)	\$ 4.0 K	
BLGR-059 (LTM)	\$70.0 K	\$203.0 K

FUTURE YEAR FUNDING

TOTAL FUTURE REQUIREMENTS: **\$4,314,000**

TOTAL IRP PROGRAM COSTS: **\$26,321,000**

Community Involvement

A RAB was established in December 1998 for the environmental restoration cleanup of BGAD. Periodic meetings include activities such as installation tours, presentations by OSC, BGAD, COE, environmental contractors, and KDEP personnel. The installation also provides fact sheets and provides copies of site documents to RAB members. Community members are invited to all RAB meetings and several have attended.

A Community Relations Plan will be developed by BGAD.

BLUEGRASS

MILITARY MUNITIONS RESPONSE PROGRAM

MMRP Summary

STATUS: Non-NPL with RCRA Interim Status

AEDB-R SITES/SITES RC: 3/0

AEDB-R SITE TYPES: Unexploded Ordinances (UXO), Discarded Military Munitions (DMM), and Munitions Constituents (MC).

CONTAMINANTS OF CONCERN: Explosives, metals

MEDIA OF CONCERN: Groundwater, surface water, soil

COMPLETED REM/IRA/RA: None

IDENTIFIED POSSIBLE REM/IRA/RA: RA at BLGR-001-R-01, RA at BLGR-002-R-01, RA at BLGR-003-R-01.

TOTAL PRIOR YEAR ER, A FUNDING: \$25,000

<i>DURATION OF MMRP:</i>	2047
Year of MMRP Inception:	2003
Year of RA Completion:	2017
Year of MMRP Completion:	2047

MMRP Contamination Assessment

DoD's environmental cleanup activities began in 1975 under IRP before any formal federal requirements or program was established. DoD instituted its IRP to address past practices that often did not take long-term environmental effects into account. Environmental laws driving the present DERP is CERCLA (1980), commonly known as Superfund. The DERP was formally established by Section 211 of the Superfund Amendments and Reauthorization Act of 1986 (SARA) and is codified in Sections 2710-2710 of Title 10 of the United States Code (USC). SARA set requirements for the DERP and its funding mechanisms, the Defense Environmental Restoration Account (DERA). DERA funding was available in 1984 before the formal establishment of the DERP.

Currently there are three sites listed under the BGAD MMRP program. The three sites are scheduled for an RI/FS in 2006. No off-post contamination or responses have been issued. No complicating factors or uncertainties have been identified.

BLUEGRASS

**MILITARY MUNITIONS RESPONSE
PROGRAM**

SITE DESCRIPTIONS

BLGR-001-R-01

AREA SOUTH OF OD UNIT

SITE DESCRIPTION

South of the current OD unit, between the southern tributary of Muddy Creek and the BGAD boundary, is a 108.4-acre area that has been impacted by historic OD operations. Though this area is not recognized as part of the OD unit, it has nonetheless been impacted by munitions and ordnance blown from and/or washed off the OD unit. Historic photographs and interviews with installation personnel confirm that OD operations that are now conducted centrally within the OD unit historically took place farther to the south, thereby impacting properties south of the OD unit. OD operations progressed northward as soils were depleted. OD operations within the unit began in 1942 and continue to this day. However, a review of a series of aerial photographs from 1949 through 1973 show that by 1966 operations had progressed to their current location, centrally within the unit, and probably no longer impacted the area south of the OD unit. For purposes of this report, dates of use for the Area South of the OD Unit are estimated to be from 1942 to 1966. Large and medium caliber munitions, small arms, explosives, landmines, ground rockets, hand grenades, mortars, propellants, and pyrotechnics were destroyed at the OD unit using demolition materials, detonators, blasting caps, and fuzes. The site is currently undeveloped land.

STATUS

REGULATORY: RCRA

CONTAMINANTS:

Explosives, Metals

MEDIA OF CONCERN:

Groundwater, Surface Water

PHASES	Start	End
PA.....	200304.....	200312
SI.....	200610.....	200709
RI/FS.....	201110.....	201209
RD.....	201510.....	201609
RA(C).....	201610.....	201709
LTM.....	201710.....	204709

RC: 201709

An ordnance and explosives (OE) removal action occurred in November 2002, but was limited to the streambed of the Southern Tributary. The results of the removal action are documented in the Site Specific Final Report, USACE, November 2002. In two separate phases, in excess of 46,000 lb of OE scrap and bullets were removed. The removal was funded under BLGR-059 and included actions performed at the New Propellant Burn Area (SWMU 6B) and the Former Waste Ammunition Detonation Area (SWMU 7). This AEDB-R site ID is not specifically associated with the Area South of the OD Unit.

Based on the available site information, it is prudent to assume additional OE/UXO (small arms, projectiles, scrap, etc.) is present within the properties south of the OD unit. A geophysical survey is necessary to accurately assess the extent of UXO-DMM contamination beyond the bounds of the current Interim Status OD Unit. The size and shape of the site indicated in this report are solely based on the interpretation of the Inventory team as discussed with the installation POC.

Perform RI/FS followed by removal assessment and possible excavation & OE removal action.

Perform RI/FS followed by removal assessment and possible excavation & OE removal action.

CLEANUP STRATEGY

Perform SI and RI. Assume an RD and RA.

BLGR-002-R-01

PINK WATER POND/WASTE DET AREA

SITE DESCRIPTION

The Pink Water Pond and the Former Waste Ammunition Detonation Area (Waste Ammo Det Area) are managed by the installation as a single site combined under a single AEDB-R number, BLGR-059. This MC site comprises 9.8 acres located south centrally within the installation in the South Burn Area of the Demolition Grounds and Restricted Area at the intersection of Routes 117 and 110.

The Pink Water Pond, SWMU 3, was temporary and constructed to accommodate startup operations of the new Shell Washout Facility in 1976, and was filled with native soil in 1980. It comprises 1.6 acres. An on-site interview with a former BGAD employee revealed the location and size of the pond. The pond was used to hold TNT wastewater discharged during a shakedown run of the new facility. Heavy equipment is currently stored there.

The Former Waste Ammunition Detonation Area (Waste Ammo Det Area), SWMU 7, was used from 1949 until 1973 to destroy large caliber high explosive and smoke rounds and to burn propellants and pyrotechnics. Items were placed in an unlined, 6 ft deep trench with wood, fuel, and an explosive charge; covered with soil; and then detonated. The Waste Ammo Det Area comprises 8.2 acres and is currently undeveloped.

An RFI completed in September 2002 recommended that a CMS be performed to evaluate potential remedial action alternatives for the soils at the West, East, and South Burn Areas. MC was detected at the sites, and results of geophysical surveying and mapping revealed the potential for buried ordnance, munitions, and other explosive materials in the subsurface soils at the South Burn Area. No subsurface UXO is suspected to be present in the West Burn Area. The CMS recommended the implementation of a Land Use Control implementation Plan (LUCIP) including dig, construction, and deed restrictions, as well as training and personal protective equipment for on-site personnel, if any. KDEP has approved the Land Use Controls, but will not approve the CMS until the LUCIP has been approved. This site was flagged RC in September 2002.

CLEANUP STRATEGY

Perform an SI and RI/FS followed by remedial action if required.

STATUS

REGULATORY: RCRA

CONTAMINANTS:

Explosives, Metals

MEDIA OF CONCERN:

Groundwater, Surface Water

PHASES	Start	End
PA.....	200304.....	200312
SI.....	200610.....	200709
RI/FS.....	201110.....	201209
RD.....	201510.....	201609
RA(C).....	201610.....	201709
LTM.....	201710.....	204709

RC: 201709

PROJECTILE/PROPELLANT BURN AREA

(PAGE 1 OF 2)

SITE DESCRIPTION

The Old Projectile Burn and the Former Propellant Burn Area are identified as SWMU 6A and are managed by the installation as a single site combined under a single AEDB-R number, BLGR-031. This MC site comprises 31.3 acres located south centrally within the installation in the Demolition Grounds and Restricted Area in the vicinity of the intersection of Route 110 and Route 117.

The Old Projectile Burn area comprises 6.5 acres located north of Route 110 and west of the intersection with Route 117. It is located within the West Burn Area. The Old Projectile Burn Area was used from 1942 to 1985. Operations at the site included melting out and OB of large caliber projectiles and propellants. According to the Installation Restoration Manager, a surface UXO investigation was performed on-site. Any ordnance that may have been recovered was destroyed at the active OD unit, scrap metal was removed by DRMO. The site is presently undeveloped and no longer being used for any activities.

The Former Propellant Burn Area comprises 24.8 acres located southwest of the intersection of Routes 110 and 117. It is located in the South Burn Area. The Former Propellant Burn Area is separated from the active "New" Propellant Burn Area (SWMU 66) by a berm that serves as the former area's western boundary. Beginning in 1942, the Former Propellant Burn Area was used for the OB of propellant powder, pyrotechnics, and explosive charges from demilitarized munitions. Munitions containing WP were also reportedly burned on-site. Oil-soaked wood and sawdust was used to facilitate the burning. Approximately 1,000 tons of explosives were destroyed each year at the site until operations ceased in 1979. According to the Installation Restoration Manager, a surface UXO investigation was performed on-site. Any ordnance that may have been recovered was destroyed at the active OD unit, scrap metal was removed by DRMO. The site is currently undeveloped.

An RFI completed in September 2002 recommended that a CMS be performed to evaluate potential remedial action alternatives for the soils at the West, East, and South Burn Areas. MC was detected at the sites, and results of geophysical surveying and mapping revealed the potential for buried ordnance, munitions, and other explosive materials in the subsurface soils at the South Burn Area.

No subsurface UXO is suspected to be present in the West Burn Area. The CMS recommended the implementation of a LUCIP including dig, construction, and deed restrictions, as well as training and personal protective equipment for on-site personnel, if any. KDEP has approved the Land Use

STATUS**REGULATORY:** RCRA**CONTAMINANTS:**

Explosives, Metals

MEDIA OF CONCERN:

Groundwater, Surface Water

PHASES	Start	End
PA	200304	200312
SI	200610	200709
RI/FS	201110	201209
RD	201510	201609
RA(C)	201610	201709
LTM.....	201710	204709

RC: 201709

BLGR-003-R-01

PROJECTILE/PROPELLANT BURN AREA

(PAGE 2 OF 2)

Controls, but will not approve the CMS until the LUCIP has been approved. This site was flagged RC in September 2002.

CLEANUP STRATEGY

Perform an SI and RI/FS followed by remedial action if required.

PAST MILESTONES

MMRP Start Date 2003

PROJECTED MILESTONES

Phase Completion Milestones: 2015+

ROD/DD Approval Dates: 2015+

Construction Completion: 2017+

Completion Date of all RA(C) Activities: 2017+

Completion Date of IRP (including LTM phase): 2047

BLUGRASS MMRP SCHEDULE

(Based on current funding constraints)

CURRENT PHASE

FUTURE PHASE

AEDB-R	PHASE	FY06	FY07	FY08	FY09	FY10	FY11+	FY12+	FY13+	FY14+	FY15+
BLGR-001-R-01	SI										
	RI/FS										
	RD										
	RA(C)										
	LTM										
BLGR-002-R-01	SI										
	RI/FS										
	RD										
	RA(C)										
	LTM										
BLGR-003-R-01	SI										
	RI/FS										
	RD										
	RA(C)										
	LTM										

PRIOR YEAR FUNDING

2002 \$25,000

CURRENT YEAR FUNDING

FY05 NONE

FUTURE YEAR FUNDING

TOTAL FUTURE REQUIREMENTS: \$10,760,000

TOTAL IRP PROGRAM COSTS: \$10,785,000